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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

YANG, ANDREW GUS

ART UNIT	PAPER NUMBER
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2628

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/810,064

Applicant(s)

WEST ET AL.

Examiner

Andrew Yang

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 11 and 16-26 is/are rejected.
- 7) ☒ Claim(s) 12-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 26 is rejected under 35 U.S.C. 101 because it is claiming a tangible media storing a representation of an image, which is nonfunctional descriptive material. See MPEP § 2106.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, 10-11, and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable in view of Guo et al. (U.S. Patent No. 6,961,058).

With respect to claim 1, Guo et al. disclose a method for determining illumination of surface points of an object in a scene from lighting comprising: determining a first thickness map for a first lighting source for the scene (Fig. 11b), wherein the first thickness map includes a first plurality of thickness values of the object with respect to distance from the first lighting source (column 11, lines 43-45). The function in Fig. 11b contains a parameter to determine whether light is partially absorbed by a yarn object before reaching more distant positions. For knitwear, which contains multiple centerlines

of yarn, each yarn object would have its own thickness value, thus multiple thickness values for the modeled knitwear object. It is noted that Guo et al. do not explicitly teach determining a surface point on the object; OFFICIAL NOTICE is taken that it is well known to determine a surface point on an object. Therefore, it would have been obvious for Guo et al. to determine a surface point on said object because this would allow for performing lighting calculations on the surface point. Guo et al. disclose determining a plurality of thickness values but do not explicitly teach determining said thickness values on a surface point. OFFICIAL NOTICE is taken that it is well known to determine object properties on a surface point, such as thickness values; therefore it would have been obvious for Guo et al. to determine thickness values associated with a surface point because this would provide information for shading the object in response to the light source. Guo et al. disclose determining a first filtered thickness value associated with the surface point on the object in response to the first plurality of thickness values (column 11, lines 3-9); the improvement in result quality is obtained from filtered thickness values. It is deemed inherent that Guo et al. determine an illumination contribution from the first lighting source at the surface point in response to the first filtered thickness value by applying a light source and shading to an object at the surface point (column 11, lines 43-45).

With respect to claim 2, Guo et al. disclose the method of claim 1, wherein determining the illumination contribution further comprises calculating the illumination contribution in response to the first filtered thickness value and a thickness value

relationship for the object selected from the group: thickness value versus absorption relationship, thickness value versus transmission relationship (column 10, lines 43-45).

With respect to claim 3, Guo et al. disclose the method of claim 2. It is noted that Guo et al. do not explicitly teach that the first plurality of thickness values of the object with respect to the first lighting source vary in direction away from the first lighting source. OFFICIAL NOTICE is taken that it is well known that objects (yarn cross sections) further away from the light source are occluded by closer yarn cross sections from the same piece of cloth, resulting in greater thickness values. Therefore, it would have been obvious for Guo et al. that values of the object with respect to the first lighting source vary in direction away from the first lighting source because this would accurately simulate a real yarn object.

With respect to claim 4, Guo et al. disclose the method of claim 3. It is noted that Guo et al. do not explicitly teach determining a first plurality of thickness values of the object between the first lighting source and the plurality of surface points in the respective directions. OFFICIAL NOTICE is taken that it is well known that a lighting source affects the plurality of points in respective directions. Therefore, it would have been obvious for Guo et al. to determine a first plurality of thickness values of the object between the first lighting source and the plurality of surface points in the respective directions because this would shade all surface points on the entire object.

With respect to claim 5, Guo et al. disclose the method of claim 2. It is noted that Guo et al. do not explicitly teach determining a second thickness map for a second lighting source. OFFICIAL NOTICE is taken that it is well known to include multiple light

sources in a scene. Therefore, it would have been obvious for Guo et al. to determine a second thickness map for a second lighting source because this would provide a more interesting scene. Claim 5 includes similar steps in claim 1 directed towards a first light source; see rationale for rejection of claim 1.

With respect to claim 6, Guo et al. disclose the method of claim 5. It is noted that Guo et al. do not explicitly teach determining a shading value from the surface point on the object in response to an illumination contribution selected from the group: the illumination contribution from the first lighting source, the illumination contribution from the second lighting source, the illumination contribution from the first lighting source and the illumination contribution from the second lighting source. OFFICIAL NOTICE is taken that it is well known to compute shading values from one or more light sources. Therefore, it would have been obvious to determine a shading value for a surface point on the object in response to the first, second, or first and second light source illumination contributions because this would allow for properly rendering the scene in response to multiple light sources.

With respect to claim 7, Guo et al. disclose the method of claim 5, further comprising determining a shading value for the surface point on the object in response to the illumination contribution from the first lighting source; see rationale for similar step in claim 6. It is noted that Guo et al. do not explicitly teach determining a pixel value. OFFICIAL NOTICE is taken that it is well known to determine pixel values; therefore, it would have been obvious for Guo et al. to determine pixel values from the shading value because this would allow a computer system to render an image. It is noted that

Guo et al. do not teach storing the image on tangible media. OFFICIAL NOTICE is taken that it is well known to store images on tangible media; therefore it would have been obvious for Guo et al. to store the image because it would allow for accessing a previously rendered image.

With respect to claim 8, Guo et al. disclose the method of claim 7 further comprising outputting the representation of the ikimage from the tangible media to one or more viewers (by using monitor 1742 in Fig. 17 or other type of display device, column 15, line 30). Although Guo et al. do not explicitly teach outputting the image from a tangible media to one or more viewers; OFFICIAL NOTICE is taken that it is well known to use display devices to output such images and images can be read from tangible media. Therefore, it would have been obvious for Guo et al. to use the display device to output the image from tangible media because this would allow the user to view stored images.

With respect to claim 10, Guo et al. disclose a computer system comprising a memory (column 14, lines 31-34) and a processor coupled to the memory (column 14, lines 38-40) for executing the method of claim 1; see rationale for rejection of claim 1.

With respect to claim 11, Guo et al. disclose the system of claim 10, wherein a thickness value versus transmission relationship in Fig. 11b that determines whether light is partially absorbed by the yarn before reaching more distant positions (column 10, lines 43-45). Guo et al. do not explicitly disclose configuring the memory and processor; OFFICIAL NOTICE is taken that the usage of these components is well known in the art for data storage and calculations. Therefore, it would have been obvious to configure

the memory to store the relationship and it would have been obvious to configure the processor for determining the illumination contribution in response to the filtered thickness value and said relationship because this would provide convenient access when processing data for rendering and for properly rendering the scene.

With respect to claim 16, Guo et al. disclose the system of claim 10. Guo et al. do not explicitly disclose using the processor to determine a shading value; OFFICIAL NOTICE is taken that using a processor for determining a shading value is well known in the art. Therefore, it would have been obvious to configure the processor for determining a shading value for a surface point in response to the illumination contribution from a first light source for the system to account for lighting in order to properly render the scene.

With respect to claim 17, Guo et al. disclose a computer program product for implementing the system and method in the general context of computer executable instructions, such as program modules (column 16, lines 22-25) wherein the implementation of the system and method is stored on or transmitted across some form of computer readable media (column 16, lines 60-61). Claim 17 is directed towards a computer program product form implementing the method of claim 1; see rationale for rejection of claim 1.

With respect to claim 18, Guo et al. disclose the computer program product of claim 17 for implementing the method in claim 2; see rationale for rejection of claim 2.

With respect to claim 19, Guo et al. disclose the computer program product of claim 18. As in the rationale of the rejection of claim 1, the first plurality of thickness

values comprise of yarn occluding the first illumination source and the surface point and surface points in a neighborhood of the surface point.

With respect to claim 20, Guo et al. disclose the computer program product of claim 18, wherein a thickness value versus absorption relationship in Fig. 11b determines whether light is partially absorbed by the yarn before reaching more distant positions (column 10, lines 43-45). Although Guo et al. do not explicitly disclose the selection of red, green, or blue as a primary component of light; such light component colors are well known in the art. Therefore, it would have been obvious to select a primary component of light from red, green, or blue because this would provide a selection of light as desired by the user.

With respect to claim 21, Guo et al. disclose the computer program product of claim 19 for implementing the first step of claim 1; see rationale for rejection of claim 1.

With respect to claim 22, Guo et al. disclose the computer program product of claim 20 for implementing the method in claim 7; see rationale for rejection of claim 7.

With respect to claim 23, Guo et al. disclose a method for determining illumination of surface points of an object in a scene from lighting similar to claim 1; see rationale for rejection of claim 1. It is noted that Guo et al. do not explicitly teach the passage of at least first and second color components of light from the first lighting source. OFFICIAL NOTICE is taken that it is well known for light sources to have more than one color component. Therefore, it would have been obvious for Guo et al. to determine an illumination contribution from the first lighting source at a surface point in response to a relationship characterizing the passage of at least first and second color

components of light because this would accurately compute the contribution from different color components of the light source.

With respect to claim 24, Guo et al. disclose the method of claim 23, wherein the relationship for the object is selected from the group: thickness value versus absorption relationship for the first and second color components, thickness value versus transmission relationship for the first and second color components (column 10, lines 43-45).

With respect to claim 25, Guo et al. disclose a computer program product (column 16, lines 22-25) for executing the method of claim 23; see rationale for rejection of claim 23.

With respect to claim 26, Guo et al. disclose the method of claim 1; see rationale for rejection of claim 1.

Response to Arguments

Applicant's arguments filed October 2, 2006 have been fully considered but they are not persuasive. Applicant argues that Guo et al. do not disclose or suggest using a filtered thickness value based on multiple thickness values to determine the illumination contribution; however, the claim language does not limit how filtered thickness values are obtained. Guo et al. disclose determining thickness values from a thickness map by using the function in Fig. 11b. The function contains a parameter to determine whether light is partially absorbed by the yarn (object) before reach more distant positions (column 10, lines 43-45). Guo et al. also disclose performing shading on slice vertices and blending the result by adjusting texture brightness (column 11, lines 3-6), thus

determining a first thickness value associated with the surface point on the object in response to the first plurality of thickness values obtained from the thickness map. The concept is applied for knitwear, which contains multiple strands of yarn; therefore, Guo et al. disclose using a filtered thickness value based on multiple thickness values to determine the illumination contribution. Applicant argues the rejection of claim 9 (now rewritten in favor of new independent claim 26) for non-statutory subject matter. However, new independent claim 26 still claims a representation of an image, which is nonfunctional descriptive material. The citation of MPEP § 2106 states, “‘nonfunctional descriptive material’ includes but is not limited to music, literary works, and a compilation or mere arrangement of data.”

Allowable Subject Matter

Claims 12-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Yang whose telephone number is (571) 272-5514. The examiner can normally be reached on 8:30-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman can be reached on (571) 272-7653. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



AGY

1/10/07

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